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(54) **Novel copper complexes for CO and olefin adsorption**

(57) A solid state composition is provided having the formula $\text{Cu}(\text{A})_n\text{Z}$, where A is CO or olefin, $n > 1$ and Z is a unitary or composite monovalent anion. Further provided are an apparatus adapted to adsorb and a method for adsorbing an adsorbate A from a fluid mixture. The apparatus and method employ an adsorbent having the formula $\text{Cu}(\text{A})_n\text{Z}$, where A is CO or olefin, $n \geq 0$ and Z is a unitary or composite monovalent anion. Z can be selected from the group consisting of: a) X^- where X^- is BF_4^- , PF_6^- or SbF_6^- ; b) $(\text{Al}_x(\text{OR})_y)^-$ where R is fluoroalkyl or perfluoroalkyl, and x is 0 and y is 1, or x is 1 and y is 4; c) $(\text{RCO}_2)^-$ where R is alkyl, fluoroalkyl, perfluoroalkyl, aryl, fluoroaryl or perfluoroaryl; d) $(\text{RSO}_3)^-$ where R is alkyl, fluoroalkyl, perfluoroalkyl, aryl, fluoroaryl or perfluoroaryl; e) $(\text{H}(\text{RCO}_2)_2)^-$ where R is alkyl, fluoroalkyl, perfluoroalkyl, aryl, fluoroaryl or perfluoroaryl; f) $(\text{H}(\text{RSO}_3)_2)^-$ where R is alkyl, fluoroalkyl, perfluoroalkyl, aryl, fluoroaryl or perfluoroaryl; g) $(\text{N}(\text{SO}_2\text{R})_x\text{R}'_y)^-$ where

R is fluoroalkyl, perfluoroalkyl, aryl, fluoroaryl or perfluoroaryl, R' is alkyl, fluoroalkyl, perfluoroalkyl, aryl, fluoroaryl or perfluoroaryl, $x + y = 2$ and $x = 1$ or 2; h) $(\text{C}(\text{SO}_2\text{R})_x\text{R}'_y)^-$ where R is fluoroalkyl, perfluoroalkyl, aryl, fluoroaryl or perfluoroaryl, R' is hydrogen, alkyl, fluoroalkyl, perfluoroalkyl, aryl, fluoroaryl or perfluoroaryl, $x + y = 3$ and $x = 1, 2$ or 3; i) $(\text{CB}_{11}\text{H}_{12-m}\text{X}_m)^-$ where m is from 0 to 12, and X is at least one member selected from the group consisting of halogen, alkyl, fluoroalkyl, perfluoroalkyl, aryl, fluoroaryl and perfluoroaryl; j) $(\text{CB}_9\text{H}_{10-m}\text{X}_m)^-$ where m is from 0 to 10, and X is at least one member selected from the group consisting of halogen, alkyl, fluoroalkyl, perfluoroalkyl, aryl, fluoroaryl and perfluoroaryl; and k) $(\text{CB}_{11}\text{F}_{11}\text{R})^-$ where R is alkyl, fluoroalkyl, perfluoroalkyl, aryl, fluoroaryl, perfluoroaryl or ammonium.

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EUROPEAN SEARCH REPORT

Application Number
EP 00 10 9003

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